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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,454	12/05/2003	Andrew James Seeley	M03B318	1037
7590 03/04/2008 The BOC Group, Inc. Legal Services-Intellectual Property 575 Mountain Ave. Murray Hill, NJ 07974				
EXAMINER WARTALOWICZ, PAUL A				
ART UNIT 1793		PAPER NUMBER		
MAIL DATE 03/04/2008		DELIVERY MODE PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/729,454

Applicant(s)

SEELEY ET AL.

Examiner

PAUL A. WARTALOWICZ

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CI/CDC)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 12/6/07 have been fully considered but they are not persuasive.

Applicant argues that Smith is not concerned with an exhaust gas containing an organometallic compound and that Smith instead describes a technique for removing halogen gases by a two-stage reaction in which the halogen reacts with silicon to form a gaseous acidic silicon halide, which reacts with basic calcium oxide to form inorganic solid salts.

However, Smith also describes treating gases comprising trimethylborate and trimethylphosphite as explained in the action. Therefore, it appears that in addition to treating halogens, Smith also teaches treating organometallic compounds.

Applicant argues that Smith is not concerned with catalytic degradation of ammonia or the use of any catalyst and is not concerned with preventing poisoning of a catalyst.

However, Smith is not relied upon to teach catalytic degradation of ammonia or the use of any catalyst or preventing poisoning of a catalyst. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant argues that the two-stage reaction of Smith is furthermore unrelated to the two distinctly different reactions used in the present invention to remove two quite different types of chemical (metalorganics and ammonia).

However, Smith also describes treating gases comprising trimethylborate and trimethylphosphite as explained in the action. Therefore, it appears that in addition to treating halogens, Smith also teaches treating organometallic compounds.

Applicant argues that one would not be motivated to replace a simple component (Ishii) with a more complex component (Smith).

However, combining Ishii with Smith would be obvious to one of ordinary skill in the art because then one would be able to combine the stages into one reactor and would not need separate temperature controls and would therefore cut down on operation costs. It does not appear that the teachings of Ishii with Smith would incur a disadvantage or disincentive for the combination of the respective patents.

Applicant argues that Ishii specifically teaches heating a lower temperature than the Smith reference and that one would not be motivated to replace a device operable at room temperature with one requiring a heater.

However, combining Ishii with Smith would be obvious to one of ordinary skill in the art because then one would be able to combine the stages into one reactor and would not need separate temperature controls and would therefore cut down on operation costs. It does not appear that the teachings of Ishii with Smith would incur a

disadvantage or disincentive for the combination of the respective patents. One of ordinary skill would be motivated to use the heated step of Smith in Ishii so as to combine the stages.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 23-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. (5632964) in view of Otsuka et al. (6749819) and Smith et al. (U.S. 5213767).

Ishii et al. teaches a method for cleaning exhaust gas which contains both ammonia and metalorganics such as trimethyl gallium and trimethyl indium including: first treating the metalorganics components with a first agent which can be copper on a soda or soda lime carrier and can be in the form of a heated fixed bed and second treating with an ammonia decomposition catalyst of nickel on a ceramic carrier with heat to decompose the ammonia into nitrogen and hydrogen (Column 1, lines 36-44; Columns 2-3, lines 66-5 respectively; Column 3, lines 27-30 and 62-65; Column 4, lines 7-28 and 51-53; Columns 6-7, lines 54-7 respectively; see also sole figure).

Ishii et al. fail to teach a zone comprising a bed of metal and a bed of metal oxide heated in a range of 200-700°C to cause metalorganic vapor to decompose.

However, Ishii et al. teach treating trimethyl metals and silane (col. 1).

Smith et al. teach a process for converting hazardous gases by chemical reactions into gaseous products (col. 1, lines 4-12) wherein gases such as silane and trimethyl borate (col. 1) are decomposed in a first stage of granular silicon (col. 2-3) and a second stage of granular lime (col. 2-4) at a temperature of 200-550°C (col. 2, 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention to provide converting hazardous gases by chemical reactions into gaseous products (col. 1, lines 10-17) wherein gases such as silane and trimethyl borate (col. 1) are decomposed in a first stage of granular silicon (col. 2, 4) and a second stage of granular lime (col. 2, 3, 5) at a temperature of 200-550°C (col. 2, 3) in Ishii et al. in order to treat substantially similar hazardous gases (gases that poison the ammonia decomposition catalyst) produced in a substantially similar process of producing semi-conductors as taught by Smith et al.

Ishii et al. teaches an embodiment wherein the first and second treating steps are in separate chambers, but does not teach an embodiment wherein the first and second treating steps occur in a single chamber sub-divided into two zones.

It would have been obvious to modify the process of Ishii et al. by combining the separate chambers into a single chamber having two portions (one for each treating agent) because making each treating agent integral to single treatment chamber would be obvious to one of ordinary skill in the art (*In re Larson*, 144 USPQ 347 (CCPA 1965)), without any undue experimentation, particularly in light of the fact that benefits such as economy of scale could be recognized by doing so. It would further be obvious

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in light of the state of the art as evidenced by Otsuka et al. (6749819) which demonstrates by way of Figures 2 (A) and (B) that one of ordinary skill in the art would recognize each physical arrangements as a known and obvious variant of the other.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL A. WARTALOWICZ whose telephone number is (571)272-5957. The examiner can normally be reached on 8:30-6 M-Th and 8:30-5 on Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Paul Wartalowicz
February 22, 2008

/Steven Bos/
Primary Examiner
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